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ON A COLLECTION OF RIVER-CRABS FROM SIAM AND ANNAM.

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With Plates I—IV and text figs. 1—2.

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The collection of river-crabs or Potamonidae which Dr Malcolm Smith has kindly sent me for examination contains seventeen species, nine of which appear to be hitherto unknown. In Miss Rathbun's elaborate memoir on the family, published in 1904-06[1], twenty-four species are recognized from Siam and French Indo-China while two other species have since been added by Balss[2]; of these twenty-six species, however, only six occur in the material I have examined.

The large number of undescribed forms in Dr. Smith's collection indicates that the Potamonid fauna of the region is one of exceptional richness. In a suitable environment, such as Siam and French Indo-China undoubtedly afford, river-crabs seem almost as adept in the production of species as certain genera of land-molluscs; it may thus be expected that further investigation will bring to light numerous additional species, many of which will probably have only a very limited range of distribution.

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1 Rathbun, *Nouv. Arch. Mus. Paris.* (4) vi, vii, viii, (1904-06).

2 Balss, *Zool. Jahrb. Syst.* xxxvii, p. 401 (1914).

In determining the collection I have followed the scheme of classification put forward by Alcock in his memoir on the Indian Potamonidae [1]. This classification, in which the Oriental species are separated into two subfamilies on the characters afforded by the mandibular palp, is now generally accepted, and marks a considerable advance on the pre-existing arrangement. It is, however, not easy to correlate it with that given in Miss Rathbun's monograph — a work which for many years to come will remain indispensable to every student of the family. The structure of the palp is not mentioned in any description published prior to 1910, and the correct position in Alcock's scheme of the numerous species in which it has not since been examined remains doubtful. Miss Rathbun's keys, though they still afford most valuable information, must for this reason be employed with unusual caution.

In subgeneric division there is room for much improvement in the present system. Many of the subgenera now in use are wholly artificial; they may facilitate identification but they tend in many instances to conceal the true affinities [2].

A number of the crabs in the collection bear on their limbs or carapace egg-cases of the aberrant commensal trematode *Temnocephala* and on some specimens adults were found. The species is most probably *Temnocephala semperi* Weber [3].

I take this opportunity of drawing attention to a change that must be made in the subgeneric name *Acanthotelphusa* as applied to Oriental Potamonidae. Bouvier in 1917 [4], in a paper in which various fresh groupings of Potamonid genera and subgenera are

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1 Alcock, *Cat. Ind. Decap. Crust.*, i *Brachyura*, fasc. ii. *Potamonidae*, p. 17 (1910).

2 There is for example little doubt that the subgenus *Geotelphusa*, as now employed, contains a number of species or groups of species which have evolved quite independently from different stocks of *Potamon s.s.*

3 See Gravely, *Rec. Ind. Mus.* viii, p. 229, pl. xiv (1913).

4 Bouvier, *C. R. Acad. Sci. Paris*, clxv, p. 619 (1917).

proposed [1], has pointed out that *P. niloticum*, the type of the subgenus *Acanthotelphusa*, differs in certain essential particulars from the Indian species to which Alcock applied the name. For the Indian forms he proposed the subgeneric name *Lobothelphusa*. I had myself independently reached the same conclusion and, being unaware of Bouvier's work, proposed in 1918 [2] the name *Acanthopotamon*, with *P. martensi* (Wood-Mason) as type. *Acanthopotamon* is thus a synonym of *Lobothelphusa*. The latter name must, however, also disappear from nomenclature as I now find that Alcock in 1909 [3] set up *Paratelphusula*, with *P. dayanum* (Wood-Mason) as type, for the Indian species of *Potamon* with large teeth on the antero-lateral border. Later in the same year, and in his subsequent memoir [4], Alcock abandoned *Paratelphusula* in favour of *Acanthotelphusa*, but the latter name, as both Bouvier and I have shown, is wrongly employed for the Indian species and must now be replaced by the former.

Bouvier, in his paper of 1917, removes *Acanthotelphusa* from its generally accepted position as a subgenus of *Potamon* and places it, together with *Lobothelphusa* (= *Paratelphusula*), under A. Milne-Edwards' *Hydrotelphusa*. In this he appears to me to be altogether mistaken, for *Paratelphusula* at any rate has unquestionably been derived from *Potamon s.s.* through such forms as *P. acanthicum*.

The measurements of the specimens recorded in this paper were all taken with a pair of parallel-jawed callipers, giving direct readings on a dial to 0.1 mm. The depth of the carapace represents the least distance between the sternum and the upper surface in the middle line, the abdomen being raised when taking the measurement.

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1 A yet more complicated scheme of grouping, which introduces three distinct grades between family and subfamily, has recently been propounded by Colosi, *Bull. Mus. Torino*, xxxv, No. 734, p. 10 (1920).

2 Kemp, *Rec. Ind. Mus.* xiv, p. 101 (1918).

3 Alcock, *Rec. Ind. Mus.* iii, p. 249 (1909).

4 Alcock, *ibid.*, p. 381, and *Cat. Ind. Decap. Crust.*, i *Brachyura*, fasc. ii. *Potamonidae*, p. 61 (1910).

Dr. Malcolm Smith has kindly presented a complete set of all the specimens in the collection, including the types of the new species, to the Zoological Survey of India (Indian Museum).

Subfamily *POTAMONINAE.*

Genus POTAMON Savigny.

Potamon (Potamon) hispidum (Wood-Mason).

1910. *Potamon* (*Potamon*) *hispidum*, Alcock, *Cat. Ind. Decap. Crust.* i, *Brachyura*, fasc. ii. *Potamonidae*, p. 36, pl. i, fig. 4.

The two specimens referred to this species agree very closely with Wood-Mason's type; the only difference worthy of note is that the post-frontal crests are slightly sharper. In her key to the species of the subgenus *Potamon* [1] Miss Rathbun remarks "moitié antérieure de la région mésogastrique spatuliforme." In the type the grooves defining the narrow anterior part of the mesogastric areola are parallel throughout the greater part of their length. In three other specimens determined by Alcock and in those here recorded the grooves are posteriorly divergent.

In both specimens the carapace is thickly clad, especially on its posterior parts, with very short upstanding bristles or setae. This coating is difficult to see, but its presence can be immediately detected by touching the carapace with the finger-tip.

The measurements of the specimens (in millimetres) are as follows:—

Sex	♀	♂
Length of carapace ..	29.8	29.4
Breadth of carapace ..	39.5	38.1
Depth of carapace ..	16.4	16.9
Fronto-orbital breadth ..	25.6	24.5
Distance between epibranchial teeth	31.5	30.6
Breadth of mesogastric areola	11.2	11.0

The specimens were obtained on Khun Tan in N. Siam, altitude 3000 ft. The species has hitherto been recorded only from Poonsee in the Kakhyen Hills and from Moung Sal on the Mekhok river (Wood-Mason and Alcock).

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1 Rathbun, *Nouv. Arch. Mus. Paris* (4) vi, p. 251 (1904).

Potamon (Potamon) smithianum, sp. nov.

Plate I, fig. 1.

The length of the carapace is fully four-fifths its greatest breadth and the depth is little less than half the breadth. The length of the posterior border is equal to the distance between the posterior edge and the hinder limit of the mesogastric areola. The surface is moderately convex in a fore and aft direction, but is not convex from side to side – the outer parts of the branchial regions are swollen and strongly elevated above the neighbouring portions of the carapace, the summits of these swellings being practically level with the central portion of the gastric region. The areolation is moderately well defined. The cervical groove can be traced throughout its course, but, as frequently happens, is most conspicuous where it forms the posterior boundary of the mesogastric areola. It is distinct where it cuts the post-orbital crests. The mesogastric areola is broad, its breadth being contained less than 3½ times in the greatest breadth of the carapace. The narrow anterior portion of the areola is well defined and somewhat spatulate, but the grooves defining the antero-lateral boundaries are invisible. On the outer side of the cervical groove, in the anterior part of its course, there is (as in *P. alcockianum* and some other species) a well-defined groove running more or less parallel with it, and the region between this groove and the antero-lateral border is very strongly inflated. The groove, which in some allied species extends from the edge of the mesogastric areola towards the posterior margin, is not visible.

The inflated portions of the branchial regions bear large smooth tubercles, round or elongate, and in the specimen examined only about 18 to 20 in number. Further back, extending across the postero-lateral borders there are some fine striae, but the remainder of the upper surface is smooth and finely pitted. There are small scattered tubercles on the front on either side of the middle line, but no trace of the eminences seen in *P. pealianum* and no median groove. A series of small and inconspicuous tubercles, tending to form a sinuous transverse line, extends across each sub-orbital lobe. The side-walls of the carapace bear striae.

The epigastric and post-orbital crests form a common curve. In the middle the former are advanced but they do not reach quite to the level of the posterior limits of the orbits; they bear 5 or 6 smooth transverse ripples or rugae on their declivous anterior edge and are separated from the post-orbital crests by a fine but well-defined groove. Between this groove and the cervical groove the post-orbital crests on either side are straight, slightly undermined and quite smooth; each is moreover strictly transverse, so that the two portions on either side of the epigastric crests form a straight line. On the outer side of the cervical groove the post-orbital crest is broken up into a few large rugae and trends forwards to the epibranchial tooth.

The front is moderately declivous and its breadth is slightly less than the diameter of the mesogastric areola. The margin when seen from above is faintly bilobed; the median excavation is very shallow and the outer angles are rounded and not produced. The edge of the front and the upper part of the orbital margin are quite smooth, but the lower orbital border is finely crenulate. The external orbital tooth is sharp and is separated from the lower border by a deep rounded excavation. The surface between the orbit and the post-orbital crest is quite smooth.

The antero-lateral borders of the carapace are not strongly arched and are conspicuously shorter than the postero-lateral, the raised edge terminating well in front of the posterior limit of the cervical groove. Below the border the branchial region is much inflated, so that, as in *P. abbotti* and *P. inornatum*, these regions are visible from above at the point where the carapace is broadest. The antero-lateral border is rather obscurely crenulate throughout its length, more finely behind than in front. The epibranchial tooth is large and acute and reaches the level of the hinder limit of the orbit.

The groove on the ischium of the third maxilliped is a trifle oblique. The merus is slightly but distinctly broader than long and the exopod bears a long flagellum.

The outer surface of the merus of the cheliped is rather closely covered with crenulate striae. Of the two inferior edges the

outer bears from 10 to 14 small tubercles; on the inner there are similar but sharper tubercles, less numerous, more widely spaced and anteriorly forming a double row. The upper surface of the carpus is not umbilicate; it bears crenulate striae, with some tubercles near the inner margin and blunt denticles on the anterior border. The tooth on the inner side is very sharp, with a brown corneous tip and with a subsidiary tooth beneath it. The palm of the chela (in the single female examined) is slightly inflated. On the inner surface it is for the most part smooth, but elsewhere it bears rugae which on the upper surface become coarse and tubercular in appearance. There is a double row of tubercles on the upper edge of the dactylus and both fingers are longitudinally grooved on both inner and outer surfaces. The fingers bear comparatively large teeth, but do not gape when the claw is closed.

The walking legs are rather long. Those of the second pair are 77 mm. in length; they exceed the third by nearly half a dactylus-length and are about 1.8 times the breadth of the carapace. The legs bear only very short and inconspicuous hairs. The anterior borders of the merus are rugose and there are some fine spinules on the anterior and distal margins of the carpus and on the anterior, distal and posterior margins of the propodus. The anterior margin of the propodus has a double edge. The dactylus bears four rows of large spinules and in all the walking legs is longer than the propodus.

The species is represented in the collection by a single female which yields the following measurements (in millimetres):—

Length of carapace	34.7
Breadth of carapace	42.9
Depth of carapace	19.1
Fronto-orbital breadth	34.6
Distance between epibranchial teeth ..	29.0
Breadth of mesogastric areola ..	12.5

The specimen, which is the type of the species, was collected by Dr. Malcolm Smith on Khao Sebap, Chantabun, Siam, at an altitude of 2600 ft.

Potamon smithianum is allied to three of Miss Rathbun's species, *P. brousmichei* [1], *P. abbotti* [2] and *P. inornatum* [3]. In *P. brousmichei*, which is known from the mountains of Cau-thi-Vay and from Saigon in Cochin-China, the gastric region is tubercular and the whole surface of the carapace covered with small granules; the post-orbital crests are crenulate and slope obliquely backwards on either side of the epigastric crests and the sub-branchial regions are not inflated and in dorsal view are not visible beyond the antero-lateral border at the point where the carapace is widest. In this last character *P. smithianum* resembles *P. abbotti* and *P. inornatum*. In the former, which is recorded from Trang in the Malay Peninsula, the carapace is proportionately much deeper, the upper surface more rugose, the cervical groove anteriorly obsolete and the post-orbital crests tuberculate. In the latter, which is recorded from the vicinity of La-Khon, near the Mekong R. in Siam, the antero-lateral borders are much more strongly arched, the cervical groove is anteriorly obsolete, the epibranchial tooth is much less prominent and the post-frontal crests more sinuous.

Potamon (Potamon) luangprabangense Rathbun.

Plate I, fig. 2.

1904. *Potamon* (*Potamon*) *luangprabangensis*, Rathbun, *Nouv. Arch. Mus. Paris* (4) vi, p. 281, pl. xi, fig. 9.

The specimens which I refer to this species differ from the types of Wood-Mason's *P. andersonianum*, with which I have compared them, in all the particulars mentioned by Miss Rathbun, except that the narrow anterior portion of the mesogastric areola is not always spatuliform. In addition the following points may be mentioned :—

The carapace is slightly more convex in both directions than in *P. andersonianum* and the surface sculpture is throughout much

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1 Rathbun, *Nouv. Arch. Mus. Paris* (4) vi, p. 272, pl. x, fig. 6 (1904).

2 Rathbun, *Proc. Biol. Soc. Washington* xii, p. 28, pl. i (1898).

3 Rathbun, *Nouv. Arch. Mus. Paris* (4) vi, p. 311, pl. xiv, fig. 1 (1904).

less deeply graven. Though the point where the cervical groove cuts the post-orbital crests can usually be discerned without difficulty, the anterior portions of this groove are otherwise faint, in strong contrast with their well-defined character in the allied species. The antero-lateral boundaries of the mesogastric areola are not (or scarcely) defined in *P. luangprabangense* though clear in *P. andersonianum*; the epigastric and post-orbital crests are less trenchant and the granulation of the post-frontal and antero-lateral portions of the carapace is finer and less crisp.

The species, as Miss Rathbun has pointed out, may readily be distinguished from *P. andersonianum* by the proportionately greater breadth of the mesogastric areola.

The specimens yield the following measurements (in millimetres):—

	A	B	C	D	E	F	G
Sex	♂	♀	♀	♀	♂	♀	♀
Length of carapace	31.0	31.9	34.0	41.8	23.6	23.5	31.7
Breadth of carapace	39.8	41.9	45.2	53.2	31.1	31.0	42.0
Depth of carapace	17.2	16.7	19.1	21.4	12.4	11.7	17.9
Fronto-orbital breadth	32.7	33.8	34.7	41.6	25.8	24.9	33.2
Distance between epibranchial teeth	26.6	27.7	29.0	33.6	21.5	21.4	27.3
Breadth of mesogastric areola ..	11.4	12.3	12.4	14.1	8.8	8.8	11.9

Specimens A, B and C are from Pa Meang, Me Wang, N. Siam taken at about 2000 feet altitude; specimen D is from Ban Nua and E and F from Hoi Khun Luang, both localities being on the Mekong river in N. Annam; specimen G is from Khun Tan, N. Siam, altitude 2800 ft. Several of the females are ovigerous, the eggs attaining a diameter of 3.5 mm.

In the two smallest specimens, E and F, the granulation of the anterior parts of the gastric region is coarser and more conspicuous than in the larger individuals, but the whole series of specimens shows considerable variation in this respect. Certain specimens,

moreover, seem to approach Miss Rathbun's very closely related *P. orleansi*, leaving one in doubt whether this species is really distinct. Specimen G, from Khun Tan, is proportionately rather broader than the remainder, with the antero-lateral borders rather more strongly arched. It is referred with some doubt to *P. luangprabangense*.

Potamon (Potamon) pealianum (Wood-Mason) var.

1910. *Potamon* (*Potamon*) *pealianum*, Alcock, *Cat. Ind. Decap. Crust.*, i *Brachyura*, fasc. ii, *Potamonidae*, p. 38, pl. x, fig. 44.

A single female belongs to the *P. pealianum* group of species and is closely related to *P. pealianum* itself. It differs from typical Assamese specimens in the following particulars:—

(1) The carapace is more convex fore and aft, especially in the anterior half, and is slightly more convex from side to side.

(2) The grooving of the carapace is more superficial, the cervical groove in particular being very indistinct anteriorly.

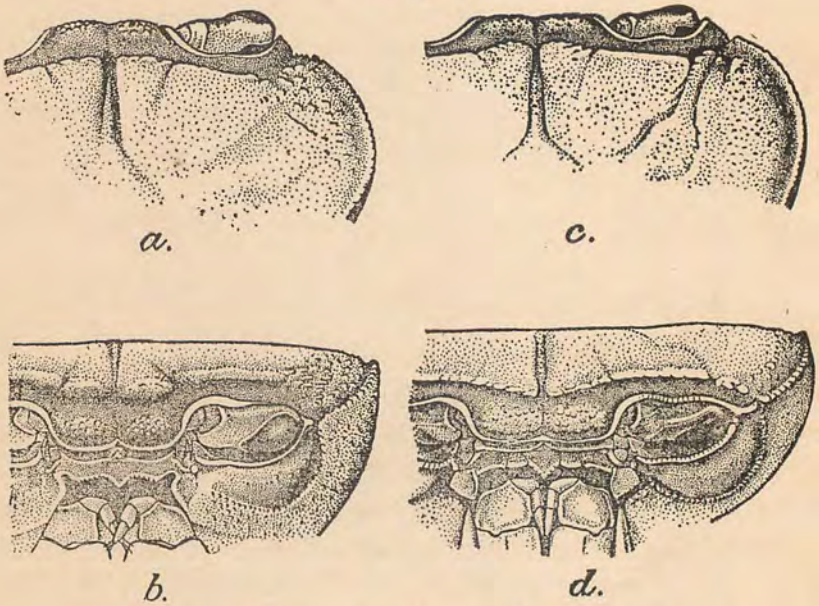
(3) The post-orbital crest is situated much nearer to the orbit, especially near the inner end, and the outer orbital tooth is smaller.

(4) The epibranchial tooth is absent. In *P. pealianum* the antero-lateral border runs forwards to a well-formed epibranchial tooth which forms the termination of the antero-lateral border, post-orbital crest and sub-orbital ridge. In the specimen before me the tooth is absent and the crenulate antero-lateral border is continued in advance of the post-orbital crests and then curves gently downwards in a broadly rounded angle to form the sub-orbital ridge.

(5) On either side of the epistome there is a deep notch extending towards the basal segment of the antenna and between this notch and the middle point of the epistome the margin is conspicuously angulate (text-fig. 1 *b*). In this remarkable character the specimen differs I believe from all other known Potamonidae. The notch no doubt functions as the efferent branchial opening, but this passage in normal *Potamon* is found in the corner of the buccal frame, between the rectangle formed by the frame and the adjacent border of the merus of the third maxilliped.

The specimen from the Kakhyen Hills recorded by Alcock as *P. pealianum* is in respect of characters 1 and 2 intermediate between the specimen in the present collection and typical examples from Assam. In character 4 the specimen is very remarkable and in 5 it appears to be unique. My reason for not describing it as a new species is owing to a suspicion that the individual will prove to be abnormal, more particularly as *P. pealianum* has already been re-

Text-fig. 1.



Potamon (*Potamon*) *pealianum* (Wood-Mason).

(*a*) Portion of the upper surface of the carapace and (*b*) carapace in frontal view of the specimen from the Me Wang Forest, together with (*c*, *d*) similar views of the type specimen from Assam.

corded from Siam. If, however, others like it can be found it will have most excellent claims to specific rank. In reference to character 5 it should be noted that Alcock (*loc. cit.*, p. 40) has described a different but almost equally remarkable variation of the epistome in specimens which he has named ("using the term 'variety' without any implication") *Potamon pealianum* var. *antennarium*. It may

thus be surmised that the species of the *pealianum* group are specially liable to unusual epistomial modifications.

In other respects the specimen agrees very closely with *P. pealianum*; the bilobed eminence on the front is well marked and in the proportionately narrow mesogastric areola it resembles this species and differs from *P. curtobates* Kemp [1].

The measurements (in millimetres) are as follows:—

Length of carapace	25.9
Breadth of carapace	33.9
Depth of carapace	16.6
Fronto-orbital breadth	23.5
Distance between epibranchial teeth[2]	27.5
Breadth of mesogastric areola ..	8.2

The specimen is a female and was found by Dr. Smith's collector in October, 1917, in the Me Wang Forest, N. Siam.

Potamon pealianum is recorded by Alcock from Sibsagar in Assam and the Kakhyen Hills in Burma and by De Man [3] from Laos.

Potamon (Potamon) larnaudii (A. Milne-Edwards).

1910. *Potamon* (*Potamon*) *larnaudii*, Alcock, *Cat. Ind. Decap. Crust*, i, *Brachyura*, fasc. ii *Potamonidae*, p. 47.

Two specimens in the collection agree very closely with the example from Bangkok (the type locality) determined and described by Alcock. All three differ from Miss Rathbun's account, though not from her figure, in having the breadth of the mesogastric areola decidedly less than one-third the greatest breadth of the carapace.

The measurements (in millimetres) are as follows:—

	A	B	C
Sex	♂	♀	♂
Length of carapace	44.0	29.3	40.8
Breadth of carapace	58.0	37.3	50.6
Depth of carapace	25.3	13.8	23.4
Fronto-orbital breadth	46.0	31.5	40.8
Distance between epibranchial teeth ..	38.2	26.6	34.0
Breadth of mesogastric areola ..	16.6	10.8	14.0

1 Kemp, *Rec. Ind. Mus.* xiv, p. 89, text-fig. 3, pl. xxiv, figs. 5, 6 (1918).

2 Or, rather, the distance between the points at which these teeth normally occur.

3 De Man, *Ann. Mus. Civ. Genova* (2) xix, p. 410, pl. v, fig. 7 (1898).

Specimens A and B were obtained by Dr. Smith's collector in October 1918 on Koh Chang (island) in the Gulf of Siam at an elevation of 1000 ft. Specimen C is that described by Alcock. In specimen B the antero-lateral borders are rather less strongly arched and the emargination of the frontal margin less deep than in the two larger individuals.

P. larnaudii appears to be restricted to Siam and Cochin-China.

Potamon (Potamon) phymatodes sp. nov.

Plate I, fig. 3.

The length of the carapace is slightly less than three-quarters its greatest breadth; the depth is a little more than half the length. The dorsal surface behind the post-frontal crests is very slightly convex in a fore and aft direction and nearly flat from side to side. The areolation is moderately well marked. The cervical groove is clearly defined throughout the greater part of its course and anteriorly it expands into a broad but rather shallow depression not unlike that found in *P. mani* and *P. thagatense*. It extends right up to the postorbital crests but becomes lost in the rugae and does not actually cut them. The epibranchial region is subdivided by a groove which commences near the point where the mesogastric areola is broadest and extends towards the postero-lateral margin. The additional groove[1] on the anterior part of this region running parallel with the cervical groove is not visible. The narrow anterior part of the mesogastric areola is limited by a pair of grooves which for the greater part of their length are parallel, but the antero-lateral boundaries of the areola are not defined. The breadth of the areola is contained about 3·3 or 3·4 times in the greatest breadth of the carapace.

The greater part of the carapace behind the post-frontal crests is smooth and, when dry, often presents a polished appearance; on close examination it is seen to be rather coarsely pitted, frequently with numbers of fine cracks radiating in all directions. In

1 This groove is clearly defined in *P. andersonianum*, *P. alcockianum*, *P. smithianum* and certain other species.

the vicinity of the antero-lateral border the surface is covered with rather low but conspicuous rugae and a few fine striae cross the postero-lateral border. There are scattered tubercles on the sub-orbital lobes and similar tubercles, merging posteriorly into fine striae, on the side-walls. Between the orbits and the post-orbital crests the surface is smooth, but the front bears a group of large and very conspicuous tubercles.

The epigastric crests form a common curve with the post-orbital crests and are separated from them by a conspicuous furrow. In the middle they reach the level of the posterior limits of the orbit; they slope gently backwards on either side up to the longitude of the cervical groove and then trend forwards to the epibranchial teeth. The edges of the epigastric crests are transversely rugose. The post-orbital crests are rather obscurely crenulate and a little undermined up to the point where the cervical groove meets them; beyond this they break up into rugae similar to those of the adjacent parts of the epibranchial region.

The front is rather conspicuously declivous and is a little narrower than the breadth of the mesogastric areola. The surface bears a group of very large and conspicuous tubercles, similar to but larger than those found in *P. larnaudii*. The group of tubercles is not divided by a median furrow but is separated from the lateral margin on either side by a smooth area. The frontal margin is obscurely crenulate and in the middle is deeply and widely emarginate; the outer angles are slightly produced, much as in *P. luangprabangense* [1]. The upper border of the orbit is faintly crenulate; the lower is strongly crenulate and separated externally from the upper by a deep excavation. The margin between the tip of the orbital tooth and the epibranchial tooth is serrate, the serrations being nearly as conspicuous as those of the antero-lateral margins.

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1 The species no doubt belongs, together with *P. luangprabangense*, to the group in which the front is described by Miss Rathbun as 'sinueusement quadrilobé', but the character is very ill-defined in these forms, though conspicuous enough in *P. cochinchinensis*.

The antero-lateral margins are strongly arched and are about as long as the postero-lateral, the raised edge of the former extending backwards to a point not far short of the latitude of the gastro-cardiac groove. The antero-lateral margin is serrate, more coarsely in front than behind. The epibranchial tooth is very small, making only an inconspicuous break in the even contour of the margin.

The ischium of the third maxilliped is traversed by the usual longitudinal groove; the merus is distinctly longer than broad. The flagellum of the exopod is well developed.

The postero-inferior surface of the ischium of the cheliped is feebly striate or almost smooth, but striae cross the upper border of the segment. Of the two antero-inferior borders the lower is sharply crenulate and the upper denticulate, with the denticles arranged for the most part in two diverging rows. The dorsal surface of the carpus is rugose and is not umbilicate. The chelae forming a pair differ little in size; on the outer and upper sides they are closely and rather finely rugulose. There are a few obscure tubercles on the upper surface of the dactylus near the base and longitudinal grooves and rows of pits on both fingers.

The second walking legs, which are the longest, are about 1·4 times the breadth of the carapace. To the unaided eye the legs are for the most part smooth and naked. The anterior edges of the merus are a little rough and fine spinules are often present on the same edge of the carpus. The anterior border of the propodus is double-edged with some very short setae in the intervening sulcus; the lower of the two edges bears sharp spinules, but these, except in the last pair, are few or absent on the upper edge. On the posterior border of the segment there is a double row of spinules and there are four rows of spinules on the dactylus. In the first three pairs of walking legs the dactylus is longer, in the last scarcely longer than the propodus. The breadth of the propodus of the last leg is considerably more than half its total length.

In the male the length of the sixth abdominal segment is very slightly more than half the basal breadth. The seventh is about one fifth longer than broad, bluntly pointed and with deeply concave lateral margins.

The eight specimens in the collection yield the following measurements (in millimetres):—

	A	B	C	D	E	F	G	H
Sex	♂	♂	♀	♀	♀	♀	♀	♀
Length of carapace ..	27.5	27.0	27.2	24.6	22.7	31.7	30.7	30.0
Breadth of carapace ..	37.0	36.2	36.5	32.0	30.0	42.2	41.8	40.5
Depth of carapace ..	14.8	15.1	14.2	12.7	12.1	16.6	15.9	15.6
Fronto-orbital breadth ..	23.2	23.0	22.3	21.0	19.8	26.5	25.0	25.5
Distance between epibranchial teeth ..	28.1	27.8	27.3	25.4	23.3	31.6	30.8	31.0
Breadth of mesogastric areola	10.7	10.5	10.6	9.5	8.9	12.6	12.2	12.1

Specimens A – E and one smaller specimen are from Daban, Phanrang Prov., S. Annam, altitude 650 ft. Specimens F – H are from Suikat, Dran, S. Annam, altitude 3000 ft. All were collected by Mr. C. Boden Kloss in March – May, 1918. The types of the species are specimens A – C.

The group of very strong tubercles on the front is one of the most striking features of this species. In this it resembles *P. larnaudii* but it differs very conspicuously in its much longer and more strongly arched antero-lateral border, in its more clearly defined cervical groove, and in the more produced outer angles of the front. In Miss Rathbun's key it comes nearest to *P. luangprabangense*, from which it differs in the smoothness of the carapace behind the postfrontal crests, in the coarse tuberculation of the front, and in many other particulars.

Potamon (Potamon) thagatense Rathbun.

1910 *Potamon* (*Potamon*) *thagatense*, Alcock, *Cat. Ind. Decap. Crust.*, i, *Brachyura*, fasc. ii, *Potamonidae*, p. 54, pl. xi, fig. 47.

Miss Rathbun [1] has expressed some doubt as to whether the specimens to which she applies this name are all identical. According to de Man's account [2] in those from Thagata in Tennasserim

1 Rathbun, *Nouv. Arch. Mus. Paris* (4) vi, p. 296 (1904).

2 De Man (as *Potamon* (*Potamonautes*) *stoliczkanum*), *Ann. Mus. Civ. Genova* (2) xix, p. 425, pls. v, vi, figs. 10, 10 *a-c* (1898).

the type locality (1) the epigastric crests in the middle are distinctly in advance of the post-orbital, (2) the angulation in the post-orbital crest is situated beyond the longitude of the outer orbital tooth and (3) the anterior parts of the epibranchial regions are smooth. In his specimen from King Island, Mergui Archipelago, on the other hand, (1) the epigastric crests are much less produced anteriorly in relation to the post-orbital crests, (2) the angulation in the post-orbital crest is immediately beneath the outer orbital angle and (3) the lateral parts of the epibranchial regions are distinctly rugose.

Alcock's specimens from Mergui agree with those from Thagata in characters 2 and 3 and with that from King Island in 1. The specimens here recorded agree with the type in characters 1 and 2, while in 3 they resemble the King Island specimen. In this last feature, however, the series shows a good deal of variation.

The specimens yield the following measurements (in millimetres):—

	A	B	C	D	E	F	G	H
Sex	♀	♀	♂	♀	♀	♂	♂	♀
Length of carapace ..	33.4	25.9	24.4	31.6	29.7	27.2	39.3	29.0
Breadth of carapace ..	46.3	34.8	32.7	43.8	40.6	37.0	52.4	39.5
Depth of carapace ..	18.9	14.5	13.8	17.5	17.0	16.4	22.8	16.2
Fronto-orbital breadth ..	28.0	22.1	21.0	26.1	25.6	22.7	31.6	24.8
Distance between epibranchial teeth ..	36.8	28.4	27.0	34.4	32.0	28.8	41.9	32.9
Breadth of mesogastric areola	15.0	10.5	10.0	13.2	13.0	10.7	14.9	12.2

Specimens A, B and C are from Koh Samui (island) in the Gulf of Siam, D and E are from Tasan, near Chumpon, Peninsular Siam, F is from Huey Sak, P. Siam, and G and H are the specimens from Mergui described by Alcock.

The species has hitherto been recorded only from the Mergui Archipelago and from Thagata on Mt. Mooleyit in Tenasserim.

Potamon (Potamon) klossianum, sp. nov.

Plate II, fig. 4.

This species is allied to *Potamon stoliczkanum* (Wood-Mason) [1] from Penang, and Lacom [2] in Peninsular Siam. I have compared it with the types of Wood-Mason's species and find that it differs in a number of conspicuous features:—

(1) The carapace is flatter from side to side and more declivous anteriorly.

(2) The cervical groove is very faint in the anterior part of its course and though it can be traced almost up to the post-orbital crests it does not expand into the conspicuous broad depression seen in the allied species.

(3) The mesogastric areola is much narrower, its breadth being only about one quarter the greatest breadth of the carapace.

(4) The epigastric crests are slightly swollen and are distinctly separated by a depression from the post-orbital crests. The bifurcation of the median groove, defining the narrow anterior part of the mesogastric areola, is clear and the groove is well defined up to the edge of the front.

(5) The front is emarginate, as in the allied species, but is perfectly smooth without any indication of tubercles.

(6) The antero-lateral border is more strongly arched, more finely crenulate and extends further backwards, almost reaching the latitude of the posterior limit of the cervical groove. The length of the crenulate edge is about equal to the distance between the cervical groove and the posterior margin, whereas in *P. stoliczkanum* it is scarcely more than two-thirds this distance. The orbital and epibranchial teeth are both blunt and much less conspicuous.

In other respects the species agrees very closely with *P stoliczkanum.* In the larger specimen the post-frontal crest is slightly concave in front, with the epigastric crests a trifle behind the level of the epibranchial teeth; the epibranchial regions are

1 Alcock, *Cat. Ind. Decap. Crust.*, i, *Brachyura*, fasc. ii *Potamonidae*, p. 53 (1910).

2 Dr. Annandale informs me that he thinks this is a village near Patalung.

smooth except for the rather coarse pitting which is found all over the upper surface. In the smaller individual the post-frontal crest is more strictly transverse, but a little sinuous on either side of the middle line, and the epibranchial regions are very faintly rugose.

Potamon klossianum is in many respects intermediate in character between *P. stoliczkanum* and *P. fruhstorferi* Balss [1]. The latter species, which is also from Annam, is a very extreme form, and differs conspicuously from that here described in the absence of the epibranchial tooth and in the continuity of the epigastric and post-orbital crests. In Miss Rathbun's key to the subgenus *Potamonautes* [2], in which *P. stoliczkanum* and allied forms are included, the species comes nearest to *P. tambelanensis* Rathbun [3], from Big Tambelan Lake in China. In this species the cervical groove appears to resemble that of *P. stoliczkanum*, the carapace is more normal in shape (the widest point being situated further back) and the epibranchial, subhepatic and sub-branchial regions and the front are rough or rugose.

The measurements of the two type specimens (in millimetres) are as follows :—

Sex	♂	♂
Length of carapace	22.8	17.2
Breadth of carapace	30.4	22.6
Depth of carapace	13.5	9.9
Fronto-orbital breadth	17.2	13.6
Distance between epibranchial teeth ..	23.3	17.7
Breadth of mesogastric areola ..	7.3	5.8

The specimens were obtained at Suikat, Langbian plateau, in S. Annam, altitude 3000 ft.

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1 Balss, *Zool. Jahrb.*, *Syst.* xxxvii, p. 403, pl. xv, fig. 2 (1914).

2 Rathbun, *Nouv. Arch. Mus. Paris* (4) vii, p. 159 (1905). This key includes species belonging both to the Potamoninae and the Gecarcinucinae ; *Potamonautes*, as Alcock has shown (*Rec. Ind. Mus.*, 1910, v, p. 253,) is a subgenus of *Potamon* which is restricted to Africa.

3 Rathbun, *loc. cit.*, p. 182, pl. xv, fig. 1.

Potamon (Potamon) sphaeridium, sp. nov.

Plate II, fig. 5.

The length of the carapace is slightly more than four-fifths its greatest breadth; the depth is more than one and a half times the length. The carapace is very strongly convex in a longitudinal direction, rather less strongly so from side to side. The posterior portion of the cervical groove is deeply cut and almost semicircular, but the two grooves which normally extend backwards from it to complete the "H" figure are unusally faint. Of the anterior portions of the cervical groove no trace whatever can be seen. The antero-lateral and anterior limits of the mesogastic areola are not defined; the breadth of the areola is contained about 3.4 times in the greatest breadth of the carapace.

When dry the carapace presents a smooth and polished appearance; it is, however, coarsely and evenly pitted and, under a strong lens, the interspaces between the pits are seen to be closely covered with microscopic tubercles. Apart from this the whole upper surface is perfectly smooth, without any indication of rugae in the vicinity of the post-frontal crests and antero-lateral borders. The sub-orbital regions are almost smooth, and there are fine striae on the side-walls which extend up to the postero-lateral border.

The epigastric and post-orbital crests form an almost straight line across the anterior part of the carapace. The former are very low and obtuse and are separated by a well-defined groove which extends on to the front. The epigastric crests are in line with the post-orbitals, but are not separated from them, though between them in certain lights a vague and exceedingly shallow depression can be detected. The post-orbital crests are straight throughout the greater part of their length but when near the antero-lateral border trend slightly forwards. At their inner ends they are low and very obtuse like the epigastric crests, but become better and better defined as they approach the lateral margin. At the extreme outer end they are sharp-cut and trenchant, even perhaps a little undermined; they are here obscurely crenulate and curve gently back to join the antero-lateral border without any indication of an epibranchial tooth.

The front is strongly declivous. Its surface is longitudinally convex, coarsely pitted, microscopically roughened and with a well-defined median groove which extends for about two-thirds of its length. In the middle of the frontal border there is a wide emargination and the lateral angles are rounded. The raised rim of the front and upper border of the orbit is perfectly smooth. The upper orbital margin is slightly sinuous (a little convex in the middle) and trends obliquely forwards from its inner angle. The lower border of the orbit is faintly crenulate and runs to the tip of the blunt outer orbital tooth.

The antero-lateral borders are strongly arched and bear a fine and sharply crenulate crest. This crest is long; it reaches nearly to the latitude of the posterior end of the cervical groove and its length measured from the outer orbital tooth, is nearly half that of the carapace. At the posterior end the crest curves inwards, but the carapace at its widest is not visible beyond it. As already remarked there is no epibranchial tooth, the crest curving gently inwards to join the sharp outer part of the post-orbital crest. The margin behind the outer orbital angle also turns inwards to join the post-orbitals, with the result that in lateral view the continuity of the border opposite the post-orbital crests is interrupted by a V-shaped incision.

The ischium of the third maxilliped is very coarsely pitted and exhibits the usual longitudinal (slightly oblique) groove; the merus is a little broader than long and the exopod bears a strong flagellum.

The chelipeds, in the single female examined, are nearly equal. The outer surface of the merus bears fine crenulate striae which pass over the upper border; the lower borders are denticulate. The upper surface of the carpus is not umbilicate and is somewhat rugose on its inner side; the usual internal spines are well developed. The palm is coarsely pitted externally and is inconspicuously rugose on its upper and lower borders. The fingers bear rows of very large and deep pits and do not gape when the claw is closed.

The walking legs are pitted, but are otherwise almost smooth, with only faint indications of roughness on the upper border of the merus and without conspicuous hairs or setae; the second pair is rather more than twice the length of the carapace. The propodus is not dorsally bicarinate and in the last pair is slightly more than twice as long as broad. The dactylus in each pair is longer than the propodus; it bears from 2 to 4 slender spines on its lower border and some small spinules (inconspicuous except in the last pair) on the bicarinate upper edge.

The measurements (in millimetres) of the single young female are:—

Length of carapace	..	..	16.8
Breadth of carapace	..	..	20.0
Depth of carapace	..	..	11.5
Fronto-orbital breadth	..	..	14.4
Breadth of mesogastric areola		..	5.9

The specimen, which is the type of the species, was obtained at Dran, Langbian plateau, S. Annam, alt. 3000 ft.

Potamon sphaeridium is distantly related to *P. siamense* (A. Milne-Edwards) and in many respects bears a rather close resemblance to *P. orientale* Parisi [1], from Formosa. From the latter species, with which I have compared it, *P. sphaeridium* differs in the following points:—

(i) The carapace is more coarsely punctate, the sub-orbital regions are smooth and the side-walls more finely striate.

(ii) The mesogastric areola is better defined posteriorly and is proportionately much broader.

(iii) The length of the posterior border is equal to the distance between that border and the cervical groove (in *P. orientale* it is much less than this distance).

(iv) The post-frontal crests form a straighter transverse line and the epigastric crests are less well-defined.

(v) The antero-lateral borders are more finely crenulate and there is no epibranchial tooth.

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1 Parisi, *Atti Soc. Ital. Sci. Nat.* lv, p. 159, pl. viii, fig. 2, pl. ix, fig. 2 (1916).

(vi) There is no notch below the outer orbital angle, and the rim which extends backwards from this angle joins the post-orbital crests (in *P. orientale* it disappears before reaching these crests).

(vii) The palm of the chelipeds is smoother and the walking legs rather more slender.

Potamon (Potamon) siamense (A. Milne-Edwards).

Plate II, fig. 6.

1904. *Potamon* (*Potamon*) *siamensis*, Rathbun, *Nouv. Arch. Mus. Paris* (4) vi, p. 306, pl. xiii, fig. 1.

A single large male no doubt belongs to this species. The cervical groove is, however, much more indistinct than would be gathered from A. Milne-Edwards' figure [1] and in the anterior part of its course can only be traced with difficulty, even where it cuts the post-orbital crests. As in the type-specimen the front is decidedly wider than the orbits, but the line of the upper border of the orbits is strictly transverse and in the middle of this border there is a feeble protrusion, the specimen in these features resembling that recorded by De Man [2] and treated separately by Miss Rathbun as a variety.

I have compared the species with an example of the allied *P. formosanum* Parisi [3], received in exchange from the Milan Museum, and find that *P. siamense* differs in the following respects :—

(i) The carapace is very much more finely punctate (almost quite smooth); the suborbital regions are smooth and the side-walls bear only very fine crenulate striae.

(ii) The epigastric crests are less advanced. The external portions of the post-orbital crests are more obtuse than the inner, and practically disappear before reaching the antero-lateral border (in *P. formosanum* they are sharp and trenchant near the antero-lateral border and much sharper than the inner portions).

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1 A. Milne-Edwards, *Nouv. Arch. Mus. Paris*, v, p. 173, pl. viii, figs. 5, 5*a* (1869).

2 De Man, in *Mission Pavie*, iii, p. 328 (1904).

3 Parisi, *Atti Soc. Ital. Sci. Nat.* lv, p. 156, pl. viii, fig. 1, pl. ix, fig. 1 (1916).

(iii) The epibranchial tooth, though small, is better defined and the rim or raised edge from the tip of the outer orbital angle extends to its base (in *P. formosanum* the rim stops abruptly long before reaching the epibranchial tooth).

(iv) The crest of the antero-lateral border is much blunter and posteriorly curves inwards, so that the carapace in dorsal view is visible beyond the crest at the point where it is widest.

(v) In the abdomen of the male the length of the sixth segment is distinctly less than half its basal breadth and the length of the seventh segment is only about three-quarters its breadth.

(vi) The merus and carpus of the chelipeds are less coarsely rugose and the latter segment is less clearly hollowed longitudinally. The outer face of the palm is not pitted.

The single male in the collection yields the following measurements (in millimetres):—

Length of carapace	30.9
Breadth of carapace	41.0
Depth of carapace	22.2
Fronto-orbital breadth	29.1
Distance between epibranchial teeth ..	32.0
Breadth of mesogastric areola ..	9.8

The specimen was obtained in March, 1917, at Khao Pleung N. Siam, at an altitude of 1500 ft.

Potamon siamense is known only from Siam. It has been recorded from the environs of Bangkok (A. Milne-Edwards) and from "les monts de la ligne de partage des eaux du Mé-Khong et du Ménam, 900 mètres d'altitude: route de Paclay (Pak Lai) à Pitchay" (De Man).

Potamon (Potamiscus) alcockianum, sp. nov.

Plate III, fig. 7.

The length of the carapace is very slightly more than three quarters the greatest breadth: the depth is less than half the length. The surface behind the post-frontal crests is flat from side to side and almost flat in a fore and aft direction. The areolation is conspicuous. The cervical groove is well defined in all its extent and cuts the post-orbital crests at a point immediately behind the outer

orbital angle. The mesogastric areola is completely defined: its breadth is contained about 3.4 times in the greatest breadth of the carapace. The epibranchial regions are subdivided by two grooves, one running obliquely backwards from the outer limit of the mesogastric areola and one more or less parallel with the cervical groove.

The anterior part of the carapace is rather coarsely rugose, the rugae having the form of almost smooth, deep ripples which are disposed obliquely on the epibranchial regions and transversely on the anterior parts of the gastric region. The central parts of the gastric region are coarsely punctate. The side-walls of the carapace and the posterior parts of the epibranchial regions bear fine striae; the suborbital regions are feebly rugose.

The epigastric crests form a common curve with the post-orbital crests and are separated from them by a conspicuous furrow; in the middle they are well in advance of the posterior borders of the orbits. The crests though sharply defined are low, not in the least undermined, and are transversely rugulose. The post-orbital crest is straight up to the point where it is cut by the cervical groove; it then trends forwards towards the position of the epibranchial tooth, but in this part of its course is obsolete or extremely ill-defined.

The front is moderately declivous; its anterior border is feebly crenulate, faintly bilobed or almost straight, and its breadth is equal to that of the mesogastric areola. The surface is finely tuberculate throughout, but is smooth in the immediate vicinity of the upturned lateral borders. The external orbital tooth is very feebly developed and, as in *P. turgidulimanus*, is not separated by a notch from the lower border of the orbit. The surface between the upper orbital border and the post-orbital crest is smooth or nearly so.

The antero-lateral borders of the carapace are about as long as the postero-lateral; they are rather strongly curved and sharply crenulate, and extend backwards to the level of the posterior limit of the mesogastric areola. The epibranchial tooth is extremely small and inconspicuous, almost obsolete.

In the male the length of the sixth abdominal segment is very little more than half the basal breadth; the seventh segment is slightly broader than long.

The merus of the third maxilliped is slightly broader than long and the longitudinal groove on the ischium is placed rather nearer to the inner than to the outer border. The flagellum of the exopod is very small, vestigial or wholly absent [1].

In the chelipeds the edges of the merus are coarsely crenulate, with a blunt tooth near the distal end of the lower border. The carpus is dorsally depressed, with the anterior edge slightly swollen; the upper surface is transversely rugulose and, on the inner aspect, there are as usual two spines. The palm is rugulose above, but the outer surface is almost smooth except for some coarse punctuation. The upper edge of the dactylus bears a series of 6 to 8 sharp teeth, and there is a conspicuous longitudinal groove on the outer side of the fixed finger. In the specimens examined the fingers almost meet when closed, without the wide gape seen in some species.

The second pair of walking legs is rather less than 1.25 times the breadth of the carapace. In all the legs the anterior border of the propodus is bicarinate. There are numerous short bristles on the segments; on the posterior border of the propodus there is a double row of 4 or 5 yellow spinules and there are 4 rows of similar but larger spinules on the dactylus. The dactylus is slightly longer than the propodus; in the second pair the latter segment is twice and in the last pair only 1·5 times as long as wide.

The principal measurements (in millimetres) of the three males which have been examined are as follows:—

Length of carapace	..	..	20.2	18.4	17.2
Breadth of carapace	..	..	26.6	24.1	22.4
Depth of carapace	..	..	11.0	10.0	9.3
Fronto-orbital breadth	..	..	17.7	16.4	15.3
Distance between epibranchial teeth		..	21.7	20.0	18.4
Breadth of mesogastric areola		..	7.8	7.0	6.6

1 In one specimen the flagellum is very small on one side and vestigial on the other; in the two remaining specimens it is either reduced to a very small rudiment or is entirely absent.

The specimens, all of which are regarded as types, were obtained on Khun Tan in N. Siam, alt. about 3000 ft.

In the sharp post-frontal crests this species resembles *P.* (*Potamiscus*) *annandalei* Alcock [1], from Cachar in Assam, and *P.* (*Potamiscus*) *decourcyi* Kemp [2] from the Abor country. In both these species, however, the cervical groove is less distinct, the antero-lateral boundaries of the mesogastric areola are not defined, the epibranchial tooth is much larger, and there is a gap or angulation beneath the outer orbital angle. In the former species, moreover, the carapace is proportionately narrower and much less rugose anteriorly, and the outer portions of the post-orbital crests are sharp and trenchant. In the latter the antero-lateral borders are less strongly arched and more coarsely crenulate and the walking legs are longer and more slender.

If the subgeneric character – the lack of the flagellum on the third maxilliped – be disregarded, the species is not unlike *P.* (*Potamon*) *koolooense* Rathbun [3] from the Western Himalayas. This species differs, however, from *P. alcockianum* in the more sharply defined external portions of the post-orbital crests, in the less rugose carapace, much larger epibranchial tooth and in the presence of a conspicuous notch below the outer orbital angle. In *P. turgidulimanus* Alcock [4], from Upper Tennasserim, which agrees with *P. alcockianum* in the last mentioned character, the carapace is much deeper and is dorsally more convex and less rugose; the cervical groove is invisible anteriorly and the mesogastric areola is much broader. *Potamon rathbuni* De Man, [5] from Formosa, in addition to the well-developed flagellum of the outer maxilliped, differs in its less advanced epigastric crests, incompletely defined mesogastric areola and much larger epibranchial teeth. In Miss Rathbun's key

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1 Alcock, *loc. cit.*, p. 57, pl. iii, fig. 10.

2 Kemp, *Rec. Ind. Mus.* viii, p. 292, pl. xvii, figs. 1–3 (1913).

3 Alcock, *loc. cit.*, p. 24, pl. x, fig. 38.

4 Alcock, *loc. cit.*, p. 52, pl. iii, fig. 9.

5 De Man, *Ann. Mus. Civ. Genova* (3) vi, p. 128, pl. iii, figs. 4–4*d* (1914).

the species comes nearest to *P. granulatum* (De Man) from Java, but from this form it is easily distinguished by a number of well-marked characters.

Potamon (Geotelphusa) loxophrys, sp. nov.

Plate III, fig. 8.

The length of the carapace is about four-fifths its greatest breadth; the depth is considerably less than half the length. The dorsal surface behind the post-frontal crests is slightly convex in both directions in males, moderately convex in females (less so in both sexes than in *P. dehaani*). The "H" groove is well defined but the anterior portions of the cervical groove are obsolete and are represented merely by a large shallow depression lying between the anterior termination of the "H" groove and the epibranchial tooth. The mesogastric areola is broad, one-third or slightly less than one-third the greatest breadth of the carapace. The antero-lateral boundaries are not defined, but the two grooves limiting the narrow anterior portion of the areola are distinct.

The dorsal surface of the carapace is smooth and often presents a polished appearance when dry; it is, however, finely pitted. Near the antero-lateral border faint indications of rugosity can usually be discerned, especially in large individuals, and there are fine striae on the postero-lateral borders. The sub-orbital regions are quite smooth but there are fine striae on the side-walls.

The post-frontal crests are better developed than in *P. dehaani* but are none the less blunt and ill-defined. The epigastric crests reach the level of the upper orbital margins and are more or less smooth above and finely rugose anteriorly; they are separated from the post-orbital crests by a broad and shallow groove. The post-orbital crests are straight, very blunt, and obscurely rugulose; they disappear shortly before reaching the antero-lateral border. The epigastric and post-orbital crests on either side of the carapace form an almost straight line which runs *obliquely backwards*; if it were continued to the antero-lateral border it would meet it at a point far behind the epibranchial tooth.

The front is rather strongly declivous and is about the same breadth as the mesogastric areola. The surface is smooth or very slightly roughened and the median groove can often be traced up to the margin. In the middle of the frontal border there is a wide and shallow emargination and the outer angles are rounded off but rectangular. The upper border of the orbit is straight and trends obliquely backwards from its inner angle (obliquely forwards in *P. dehaani*). The edge is very finely and obscurely crenulate. The lower border is rather more distinctly crenulate and runs to the base of the orbital tooth – not to its tip as in most allied forms. The orbital tooth itself is strong.

The antero-lateral borders are not strongly arched and the epibranchial tooth is small or very small, but always distinct. The finely crenulate edge behind this tooth in the posterior part of its course curves inwards on to the dorsum, so that the carapace in dorsal view is visible beyond it at the point where it is widest. The crenulate edge is, moreover, very short, its total length measured from the tip of the orbital tooth being less than one third the greatest breadth of the carapace.

In the male the length of the sixth abdominal segment is exactly half its distal breadth; the seventh is about two-thirds as long as broad.

The ischium of the third maxilliped is traversed by the usual longitudinal groove; it runs obliquely and at the proximal end is nearer the outer side. The merus is very distinctly broader than long and the exopod bears a long flagellum. Across the sternum between the bases of the third maxillipeds there is a deep groove.

The chelipeds are very unequal in males; in females almost or quite equal. They bear a close resemblance to those of *P. dehaani*, but the upper surface of the carpus is rougher and its inner spine less well developed. The palm is smooth and the fixed finger forms an obtuse angle with its lower border. In one of the males the fingers of the larger cheliped gape considerably. The walking legs do not differ materially from those of *P. dehaani*. The second pair is about twice the length of the carapace; in the fifth pair the dac-

tylus is a little longer than the propodus, the latter segment being about twice as long as broad.

The measurements of seven specimens (in millimetres) are as follows:—

	A	B	C	D	E	F	G
Sex	♂	♀	♀	♂	♂	♀	♀
Length of carapace	20.3	22.7	16.2	15.7	17.8	16.2	19.5
Breadth of carapace	24.8	28.1	19.8	19.8	23.0	20.5	24.5
Depth of carapace	11.8	12.5	9.1	9.2	10.4	9.0	11.0
Fronto-orbital breadth	18.7	20.0	14.8	14.7	17.1	15.1	17.5
Distance between epibranchial teeth	22.2	24.4	17.7	18.0	20.3	18.3	21.5
Breadth of mesogastric areola ..	8.3	9.8	6.5	6.4	6.7	6.4	7.8

Several of the females are ovigerous, the eggs reaching a maximum diameter of 2·5 mm.

All the specimens are from S. Annam and were collected by Dr. Malcolm Smith and Mr. C. Boden Kloss in March - May 1918. Specimens A and B, types of the species, are from Dran in Langbian Province, altitude 3000 ft.; specimens C and D are from Suikat, near Dran, altitude 3000 ft; specimens E, F, and three smaller females are from Langbian Peaks, altitude 6000 ft.; specimen G is labelled "S. Annam."

This species with its very obtuse post-frontal crests and small epibranchial tooth is intermediate between the subgenera *Potamon* and *Geotelphusa*. I include it in the latter because of its evident relationship with *P. (Geotelphusa) dehaani*. From this species, which has been recorded from Japan, China and the Loo Choo Islands., *P. loxophrys* differs conspicuously in its flatter carapace (especially in males), in the stronger and much more oblique post-frontal crests, in the stronger orbital tooth and more conspicuous epibranchial tooth and in the shorter antero-lateral border which curves inwards on to the dorsum of the carapace. In Miss Rathbun's key to the species

of *Geotelphusa* [1] the species comes nearest to *P. agassizi* from Australia, but it differs in many evident characters.

Potamon (Geotelphusa) dehaani (White).

var. **laevior,** nov.

Plate III, fig. 9.

A number of specimens from S. Annam agree very closely with *P. dehaani*, with Japanese specimens of which I have compared them. The only differences are the following:—

(i) The upper surface of the carapace is less strongly and less closely punctate. The bifurcate groove delimiting the narrow anterior portion of the mesogastric areola is more distinct. The posterior border is proportionately rather longer.

(ii) The line formed by the upper border of the orbit is transverse in direction; in *P. dehaani* it trends a little forwards from the inner angle.

(iii) The lower border of the orbit is smooth, or very minutely and obscurely crenulate: in *P. dehaani* it is conspicuously crenulate.

(iv) The antero-lateral border is a little shorter and posteriorly curves inwards on to the dorsum, so that the carapace, at the point where it is broadest is visible beyond the border. The border is, moreover, entire or very obscurely crenulate, whereas in all specimens of *P. dehaani* that I have seen it is conspicuously serrate.

In all other respects the two sets of specimens are in closest agreement and I think it probable that the Annamese form will prove to be merely a variety or subspecies of *P. dehaani*. Our knowledge of the Potamonidae of China is at present meagre and *P. dehaani*, which is common in Japan, has only once been recorded (without definite locality) from the former country. When further Chinese specimens have been examined we shall be in a better position to come to a decision on the status of the form from Annam.

The measurements (in millimetres) of nine specimens are as follows:—

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1 Rathbun, *Nouv. Arch. Mus. Paris* (4) vii, p. 200 (1905). This key includes species belonging both to the Potamoninae and the Gecarcinucinae and it is not certain that *P. agassizi* really belongs to the former subfamily.

	A	B	C	D	E	F	G	H	J
Sex	♂	♂	♂	♀	♀	♀	♀	♀	♀
Length of carapace	14.8	14.7	11.8	14.4	13.7	19.3	18.0	18.9	18.3
Breadth of carapace ..	19.6	19.6	15.2	18.9	17.3	24.8	22.8	23.7	23.1
Depth of carapace	9.1	9.2	7.0	8.5	7.9	11.1	10.2	10.8	10.4
Fronto-orbital breadth ..	13.6	14.4	11.2	13.5	12.3	17.3	16.9	17.0	16.7
Distance between epibranchial teeth	16.7	17.6	13.8	16.7	15.3	21.5	20.3	20.8	20.4
Breadth of mesogastric areola ..	5.8	5.7	4.5	6.0	5.2	7.8	7.0	7.1	7.1

All the specimens are from the Langbian Plateau in S. Annam, collected by Dr. Malcolm Smith and Mr. C. Boden Kloss in March - May, 1918. Specimens A – E, the types, together with two smaller individuals are from the Langbian Peaks, altitude 6000 ft.; specimens F and G are from Dalat, altitude 5000 ft.; specimens H, J, and five smaller examples are merely labelled "Langbian."

Subfamily *GECARCINUCINAE.*

Genus PARATELPHUSA Milne-Edwards.

Paratelphusa (Paratelphusa) dugasti (Rathbun).

1905. *Potamon* (*Paratelphusa*) *dugasti*, Rathbun, *Nouv. Arch. Mus.* Paris (4) vii, p. 242, pl. xi, fig. 10, text-fig. 58.

Six specimens in the collection agree exactly with Miss Rathbun's description and differ from *P. sinensis* Milne-Edwards, with which I have compared them, in the particulars which she has noted. In two young males the sixth abdominal somite is less contracted proximally than in adults.

The measurements of the specimens (in millimetres) are as follows:—

	A	B	C	D	E	F
Sex	♂	♂	♂	♂	♂	♀
Length of carapace ..	32.1	31.2	29.0	17.3	15.7	31.7
Breadth of carapace ..	40.9	41.6	39.0	21.8	19.8	43.3
Depth of carapace ..	18.7	18.5	17.7	9.8	9.3	18.3
Distance between posterior epibranchial teeth ..	39.5	40.8	38.1	21.3	19.6	40.6

Specimens A and B were found in E. Siam, collected by Mr. C. Boden Kloss in May, 1917; specimens C – E are from Lat Bua Kao, near Korat, E. Siam, collected by Mr. C. Boden Kloss in October, 1916; specimen F is from Koh Lak in S. W. Siam. There are also two young specimens from Lat Bua Kao, near Korat, E. Siam.

The species has been recorded from several localities in Laos, and from Cochin China.

Paratelphusa (Paratelphusa) anophrys, sp. nov.

Plate IV, fig. 10.

The length of the carapace is slightly more than three-quarters its greatest breadth; the depth is rather more than half the length. Behind the post-frontal crests the carapace is slightly convex longitudinally, but transversely at its widest point the surface is markedly sinuous, the convex gastric region being separated from the upturned epibranchial teeth by a broad concave depression. The "H" groove is distinct and is situated nearer than usual to the posterior margin; measured in the middle line the distance between the cervical groove and the posterior border is less than half the distance from the cervical groove to the edge of the front. The anterior portions of the cervical groove are obsolete and are represented merely by the large depressions referred to above. The antero-lateral boundaries of the mesogastric areola are not defined and the groove which separates the epigastric crests does not bifurcate posteriorly. The distance between the visible portions of the cervical groove at their anterior ends is rather less than one-third the greatest breadth of the carapace.

The greater part of the upper surface of the carapace is finely punctate but smooth; when dry it presents a polished appearance but the front and the depressions on the epibranchial regions are dull. Nowhere are there any traces of rugae. A fine ridge traverses the suborbital region in its inner half, running towards the foremost epibranchial tooth, but disappearing long before it reaches it. The infra-branchial region is finely striate, and strong conspicuous striae cross the postero-lateral border.

The epigastric crests are very conspicuous and in breadth are equal to the frontal margin. They are separated by a well-defined groove and their edges are sharp and entire; on their anterior declivous faces some fine oblique rugae can be seen. They form an almost straight transverse line, situated only a little behind the posterior limits of the orbits. *Of the supra-orbital crests no trace is visible.*

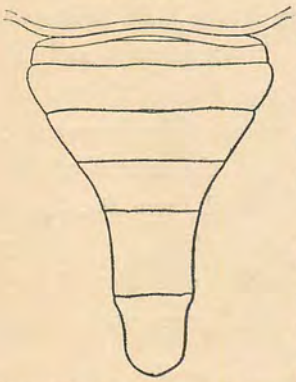
The front is scarcely at all declivous and is smooth, without a median groove; the lateral borders are slightly raised in the vicinity of the orbit. The distance between the anterior margin and the epigastric crests is about one-third the distance from the cervical groove to the posterior margin of the carapace. The anterior border is very feebly emarginate in the middle; the antero-lateral angles are rounded and very obtuse, the margin sloping obliquely backwards to a point opposite the junction of the eye-stalk and cornea. The edges of the front and of the orbit are smooth, the lower border of the latter bearing a blunt tooth near its inner end which is visible in dorsal view.

The antero-lateral borders are cut into three broad and strong teeth, exclusive of the less sharply pointed outer orbital tooth. The carapace is broadest across the tips of the posterior teeth and all the teeth are somewhat reflected upwards. The distance between the tips of the orbital tooth and posterior epibranchial tooth is equal to that between the cervical groove and the posterior margin and is half the distance from the posterior epibranchial tooth to the posterior margin. The second epibranchial tooth is equidistant between the first and second, the first being nearer to the orbital angle than to the second. From the tip of the posterior tooth a smooth crest

extends backwards for a short distance, curving inwards on to the dorsum of the carapace. The postero-lateral borders are distinctly concave in dorsal view.

In the abdomen of the male the fifth segment is rather less than-one third as long as its basal breadth. The proximal breadth of the sixth segment is rather greater than its length, its distal breadth rather less than its length; its lateral margins are very feebly sinuous and are not contracted near the base as in some allied species. The seventh segment is about equal in length with the sixth and is scarcely longer than its proximal breadth; at the apex it is broadly rounded.

Text-fig. 2.—



Paratelphusa (*Paratelphusa*) *anophrys*, sp. nov. Abdomen of male.

The mandibular palp is typical of the genus as redefined by Alcock. The ischium of the third maxilliped is grooved near its inner border; the merus is considerably broader than long and the exopod bears a long flagellum.

The chelipeds in the single male examined are decidedly unequal and are smooth except for faint striae crossing the upper border of the merus. Near the distal end of the merus on its upper side there is a strong tooth. The fingers are sharply pointed and are not grooved; they gape somewhat when the claw is closed.

The walking legs are rather short, the second pair being scarcely more than one and a half times the length of the carapace; they bear numerous very short yellow bristles. There is a tooth near the distal end of the upper border of the merus, spinules arranged in a double row on the lower border of the propodus and four rows of spines on the dactylus. The dactylus is equal in length with the propodus in the second pair of legs; in the remainder it is proportionately longer. In the last pair the propodus is considerably less than twice as long as broad and the dactylus is about four times as long as broad.

The measurements (in millimetres) of the single male are as follows :—

Length of carapace	..	..	19.5
Breadth of carapace [1]	..	..	25.7
Depth of carapace	..	..	11.0
Fronto-orbital breadth	..	..	16.3

The specimen, which is the type of the species, was obtained on Khao Ram, in the Nakon Sritamarat Mts. in Peninsular Siam, at 1200 ft. altitude.

The species belongs to the same section of the subgenus *Paratelphusa* as *P. sinensis* Milne-Edwards and *P. dugasti* (Rathbun), but differs conspicuously from both in its much flatter carapace, in the complete suppression of the post-orbital crests, in the much larger teeth of the antero-lateral border, in the form of the male abdomen and in many other features. *P. salangensis* Ortmann [2] and *P. brevicarinatus* Hilgendorf [2], both from Salanga Island (Puket) on the west coast of Peninsular Siam appear to be more closely related, but the former lacks the subterminal spine on the merus of the walking legs, while the latter, as may be gathered from De Man's comparison of the types with specimens of *P. dugasti* [3], is evidently a strongly convex species. No figures are available of either of the species from Salanga Island and the descriptions leave much to be desired.

Paratelphusa (Paratelphusa) tetragonum (Rathbun).

Plate IV, fig. 11.

1905. *Potamon* (*Paratelphusa*) *tetragonum*, Rathbun, *Nouv. Arch. Mus. Paris* (4) vii, p. 250, pl. xii, fig. 2.

An adult male and female and four small specimens are referred to this species with some doubt, for they differ considerably among themselves and no one of them agrees precisely with Miss Rathbun's description. In her key to the species of the subgenus all of them fall readily enough under *P. tetragonum*, for they agree

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1 Between the tips of the posterior epibranchial teeth.

2 For references see Rathbun, *Nouv. Arch. Mus. Paris* (4) vii, p. 244 (1905).

3 De Man, *Bull. Soc. Philom. Paris* (8) x, p. 40 (1898).

with that species and differ from *P. germaini*, *P. prolata* and *P. neisi* (I have compared them with the first-named) in the less convergent postero-lateral borders and in the much less sinuous post-frontal crests.

The adult female appears to agree most nearly with the original description which is based on specimens of the same sex. The carapace behind the post-frontal crests is flat both longitudinally and from side to side and is rather conspicuously depressed in the vicinity of the posterior epibranchial tooth. In front of the crests the surface is flat or slightly concave and slopes only a little downwards — Miss Rathbun's remark "recourbée en bas vers le front" does not seem to apply well. The edge of the front, as in the types, is feebly sinuous; its surface is somewhat folded and exhibits a broad median depression and one running to each outer angle, these depressions being separated by two low elevations which are broadest and faintest in the neighbourhood of the epigastric crests. The epibranchial teeth agree closely with Miss Rathbun's description; the distance between the two hindmost is greater than that between the two foremost or between the foremost and the outer orbital angle. All the teeth are, however, directed obliquely *upwards* and forwards, a character not mentioned in the original description. In all other respects the specimen agrees closely with Miss Rathbun's account; the postero-lateral borders converge very slightly and the posterior border is exactly half the greatest breadth of the carapace.

In the adult male the carapace is decidedly more convex in both directions, the depression in the neighbourhood of the posterior epibranchial tooth is absent, the front is more declivous, the postero-lateral borders are slightly more convergent and the breadth of the posterior border is a little less than half the greatest breadth of the carapace. The post-frontal crests agree very nearly with those of the female and with the original description, but the depressions and elevations found on the front of the female specimen are absent. The outer orbital angle is less acute and the epibranchial teeth are slightly less upturned and more evenly spaced, though the interspace between the two hindmost teeth is still the largest. The length

of the fifth segment of the abdomen is rather less than half its basal breadth. The sixth segment is not much contracted; its least breadth is about three-quarters its maximum breadth and its greatest breadth exceeds its length. The seventh segment is equal in length with the sixth.

The four young specimens (3 ♂, 1 ♀) were found with the adult female, but in the shape and convexity of the carapace and in the form of the epibranchial teeth resemble the adult male. The front, however, shows indications of the depressions and elevations seen in the female. The young specimens agree among themselves and differ from both the adults in possessing distinct traces of the anterior portions of the cervical groove. The groove is shallow but quite distinct and extends from the anterior limits of the "H" groove towards the middle epibranchial tooth. If the grooves were continued backwards in a straight line until they met they would enclose an angle much greater than a right angle. In the males, as might be expected, the sixth abdominal segment is less contracted than in the adult of that sex.

I am doubtful whether all the specimens are properly attributed to a single species. The adult female is, however, in my opinion correctly referred to *P. tetragonum* and the rather remarkable differences which the other specimens exhibit are possibly to be explained by the difference in sex and age. Further material is necessary before a decision on this point can be reached.

Four specimens yield the following measurements (in millimetres):—

	A	B	C	D
Sex	♂	♀	♂	♀
Length of carapace	20.0	17.1	14.1	11.0
Breadth of carapace[1]	24.9	20.6	16.8	13.2
Depth of carapace	11.1	7.9	7.2	5.5
Fronto-orbital breadth ..	17.7	13.9	12.1	9.6
Breadth of posterior	11.2	10.3	7.6	6.2

All the specimens were obtained in May, 1921, near the

1 Beween tips of posterior epibranchial teeth.

Mekong R. in Indo-China at about Lat. 17°. 30′ N. Specimen A is from M. Lakhon near Sarabouri; specimens B – D and two other young males are from Nong Kay, near Vien Chan.

The locality of the type specimens is unknown. Other specimens examined by Miss Rathbun were collected by M. Harmand in 1876, probably in Cochin China.

Paratelphusa (Phricotelphusa) aedes, sp. nov.

Plate IV, fig. 12.

The length of the carapace is nearly three-quarters its greatest breadth; the depth is slightly more than half the length. The dorsal surface behind the post-frontal crests is strongly convex longitudinally in its anterior half, but in its posterior half is almost flat; in a transverse direction it is slightly flat. The "H" groove is well-defined; its anterior extremities run almost parallel to one another and the distance between them is only about one-quarter the greatest breadth of the carapace. The groove separating the epigastric crests is rather vaguely bifurcate posteriorly. The anterior portions of the cervical groove are not defined, but the epibranchial regions are somewhat swollen and are separated from the gastric by a shallow and almost longitudinal depression. The postero-lateral borders are unusually long. There is a distinct transverse groove or depression just in advance of the bases of the last pair of legs and the hinder border is narrow, its breadth being decidedly less than half the greatest breadth of the carapace.

The greater part of the upper surface is rather finely punctate and, when dry, presents a dull appearance. Behind the post-frontal crests small inconspicuous rugae can be detected and there are some fine striae near the antero-lateral border. The hollowed surface between the orbit and the post-orbital crest is smooth. The sub-orbital regions are obscurely roughened and the side-walls bear numerous fine striae. Conspicuous striae cross the postero-lateral border.

The epigastric crests have sharp edges and slope obliquely backwards from the middle line. On their anterior faces near the middle there are some fine transverse ridges and at their outer ends

they are much in advance of the post-orbital crests. If a line be drawn joining the inner ends of the post-orbital crests its distance from the epigastric crests in the middle line is almost equal to the distance between the latter and the edge of the front. The post-orbital crests are thin, sharp and slightly undermined, with the edge microscopically crenulate. They extend outwards in a strictly transverse direction and end abruptly shortly after passing the longitude of the middle of the orbit. The length of the post-orbital crest is slightly less than the distance between its outer end and the epibranchial tooth.

The front is strongly declivous up to a point not far distant from its anterior margin; it here bears a transverse row of coarse and irregular granules and from this point to the margin is vertically declivous. The margin itself is entirely concealed in dorsal view. Apart from the row of granules the surface is smooth and without a median groove. The margins of the front and orbits are finely rimmed and near the inner border of the orbit there is a crescentic swelling. The margin of the front is straight and the outer angles are rectangular. The upper border of the orbit is sinuous (a little convex in the middle); it trends a little forwards from the inner angle and is finely crenulate. The lower border is similarly crenulate; the tooth at its inner end is very inconspicuous and at the outer end it runs without discontinuity to the tip of the outer orbital tooth. This is sharply acute in dorsal view and reaches as far forwards as the edge of the front.

Behind the orbital tooth a finely crenulate rim or raised edge, similar to that which borders the orbit, extends backwards towards the epibranchial tooth; it abruptly disappears, however, on completing half the distance. The epibranchial tooth, though not very large, is acute and conspicuous; owing to the strong curvature of the anterior part of the carapace it is situated much above the level of the outer orbital tooth. From its tip a very finely crenulate crest or rim extends backwards, but this crest is not continuous but is broken up into three portions, each of which tends to curve inwards posteri-

orly [1]. The whole extent of the crest is very short, the length from the posterior end to the tip of the orbital tooth being only about one-quarter the breadth of the carapace.

The mandibular palp is typical of the genus *Paratelphusa*. The ischium of the third maxilliped is longitudinally grooved, the groove at the proximal end being exactly in the middle of its breadth. The merus is much broader than long; its outer angles are produced, but rounded, and its anterior margin is slightly concave. The exopod reaches nearly to the end of the ischium and is without any trace of a flagellum.

The chelipeds in the single female examined are unequal, the palm of the left limb being about one-third deeper than that of the right. The merus is conspicuously rugose on its outer surface and upper border; both lower borders are denticulate and there is no subterminal dorsal spine. The carpus is strongly rugose above and bears a sharp inner tooth. The palm is also rugose, the rugae becoming transformed into small forwardly-directed denticles on the upper border. The fingers bear a number of fine ribs, each of which is minutely denticulate. In the larger chela the fingers are twice as long as the upper border of the palm; they bear only small teeth and do not gape when the claw is shut.

The walking legs are remarkable for their great length. The second pair is nearly twice as long as the carapace is broad and the last pair is twice the carapace-length. The merus of the second pair is as long as the fronto-orbital breadth and is nearly 4·5 times as long as wide. In all the legs the upper surface of the merus is rough; its anterior edge is also rough and is without a subterminal tooth. There are some slender spines on the posterior border of the propodus and some spinules on its bicarinate anterior border. In both the second and last pairs the propodus is three times as long as wide. In the second pair the dactylus is very slightly longer than the propodus, in the last pair it is a little shorter. In all the legs the dactylus is greatly flattened and remarkably parallel-sided; it

[1] The arrangement in the single specimen examined is not quite identical on the two sides.

bears four rows of yellow spines, two on its anterior edge and two on its posterior edge.

The measurements (in millimetres) of the single female specimen are as follows:—

Length of carapace	19.0
Breadth of carapace	25.8
Depth of carapace	10.7
Fronto-orbital breadth	16.8
Distance between epibranchial teeth ..	22.4
Breadth of mesogastric areola ..	6.5

The specimen was found on Khao Ram in the Nakon Sritamarat Mts., Peninsular Siam, at 1200 ft. altitude.

Paratelphusa (*Phricotelphusa*) *aedes* is related *P.* (*P.*) *callianira* (De Man)[1] from the Mergui Archipelago. I have compared the two species and find that in the Siamese form, (i) the carapace is considerably broader in proportion to its length, with much narrower posterior margin and with the anterolateral borders more strongly arched, (ii) the mesogastric areola is much narrower, (iii) the outer portions of the post-orbital crests (sharply defined but separate from the inner portions in *P. callianira*) are altogether absent, (iv) the upper border of the orbit trends obliquely forwards from its inner angle and the orbital and epibranchial teeth are longer and more acute, and (v) the legs are considerably longer and much more slender (the propodus being at most twice as long as wide in *P. callianira*).

[1] Alcock, *Cat. Ind. Decap. Crust.*, *I*, *Brachyura*, fasc. ii, *Potamonidae*, p. 102, pl. xiii fig. 62.

Explanation of Plate I.

Fig. 1. *Potamon (Potamon) smithianum*, sp. nov. Female from Khao Sebap, Chantabun, S. E. Siam : carapace 42·9 mm. in breadth.

„ 2. *Potamon (Potamon) luangprabangense* Rathbun. Male from Pa Meang, N. Siam : carapace 39·8 mm. in breadth

„ 3. *Potamon (Potamon) phymatodes*, sp. nov. Male from Daban, Phanrang Prov., S. Annam : carapace 37 mm. in breadth.

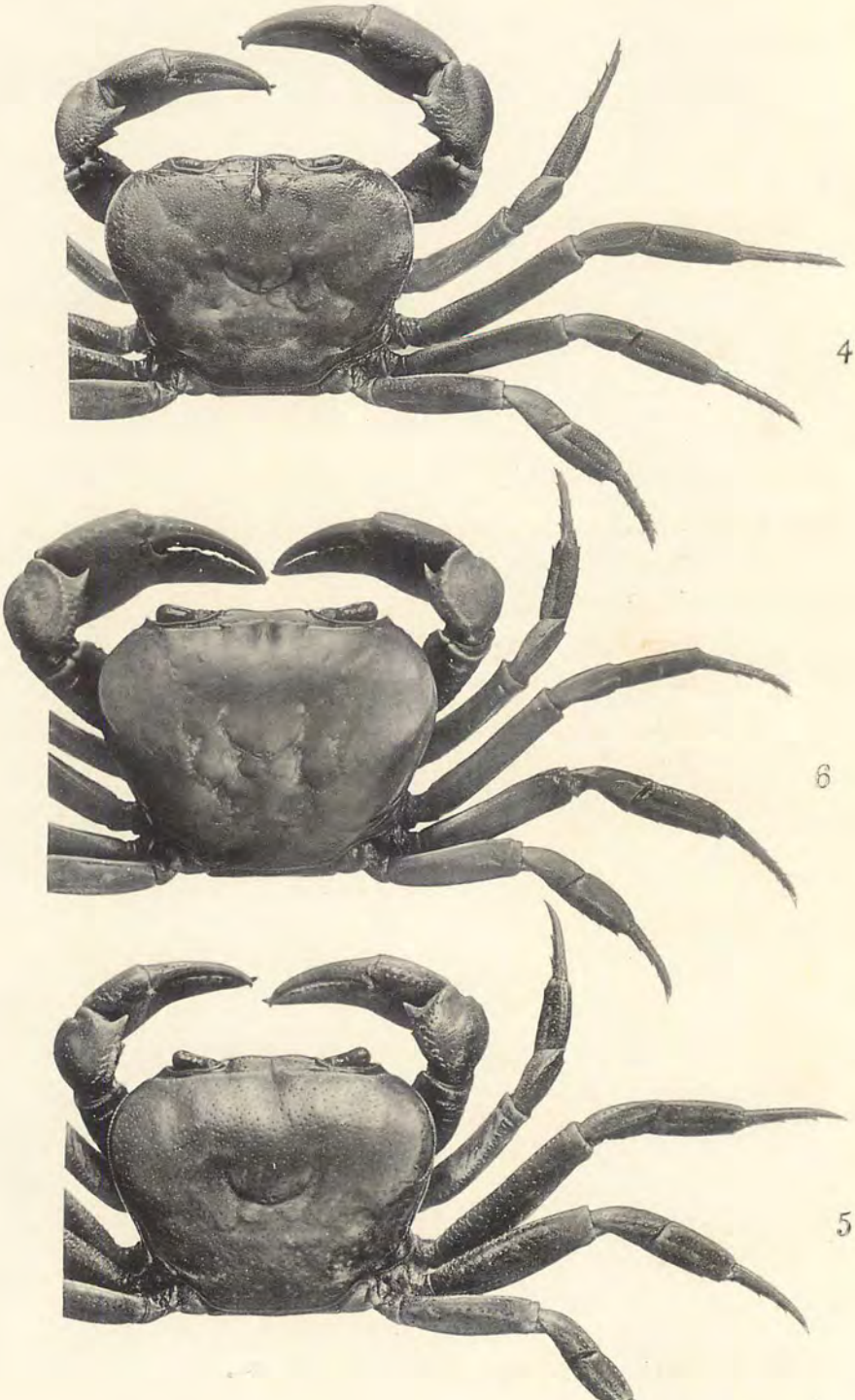
RIVER-CRABS FROM SIAM AND ANNAM

Explanation of Plate II.

Fig. 4. *Potamon (Potamon) klossianum*, sp. nov. Male from Suikat, S. Annam: carapace 30·4 mm. in breadth.

„ 5. *Potamon (Potamon) sphaeridium*, sp. nov. Young female from Dran, Langbian Prov., S. Annam: carapace 20 mm. in breadth.

„ 6. *Potamon (Potamon) siamense* (A. M.-Edw.). Male from Khao Pleung, N. Siam: carapace 41 mm. in breadth.



RIVER-CRABS FROM SIAM AND ANNAM.

Explanation of Plate III.

Fig. 7. *Potamon (Potamiscus) alcockianum*, sp. nov. Male from Khun Tan (Doi Nga Chang,) N. Siam : carapace 26·6 mm. in breadth.

„ 8. *Potamon (Geotelphusa) loxophrys*, sp. nov. Male from Dran, Langbian Prov., S. Annam : carapace 24·8 mm. in breadth.

„ 9. *Potamon (Geotelphusa) dehaani* (White) var. *laevior*, nov. Male from the Langbian Peaks : carapace 19.6 mm. in breadth.

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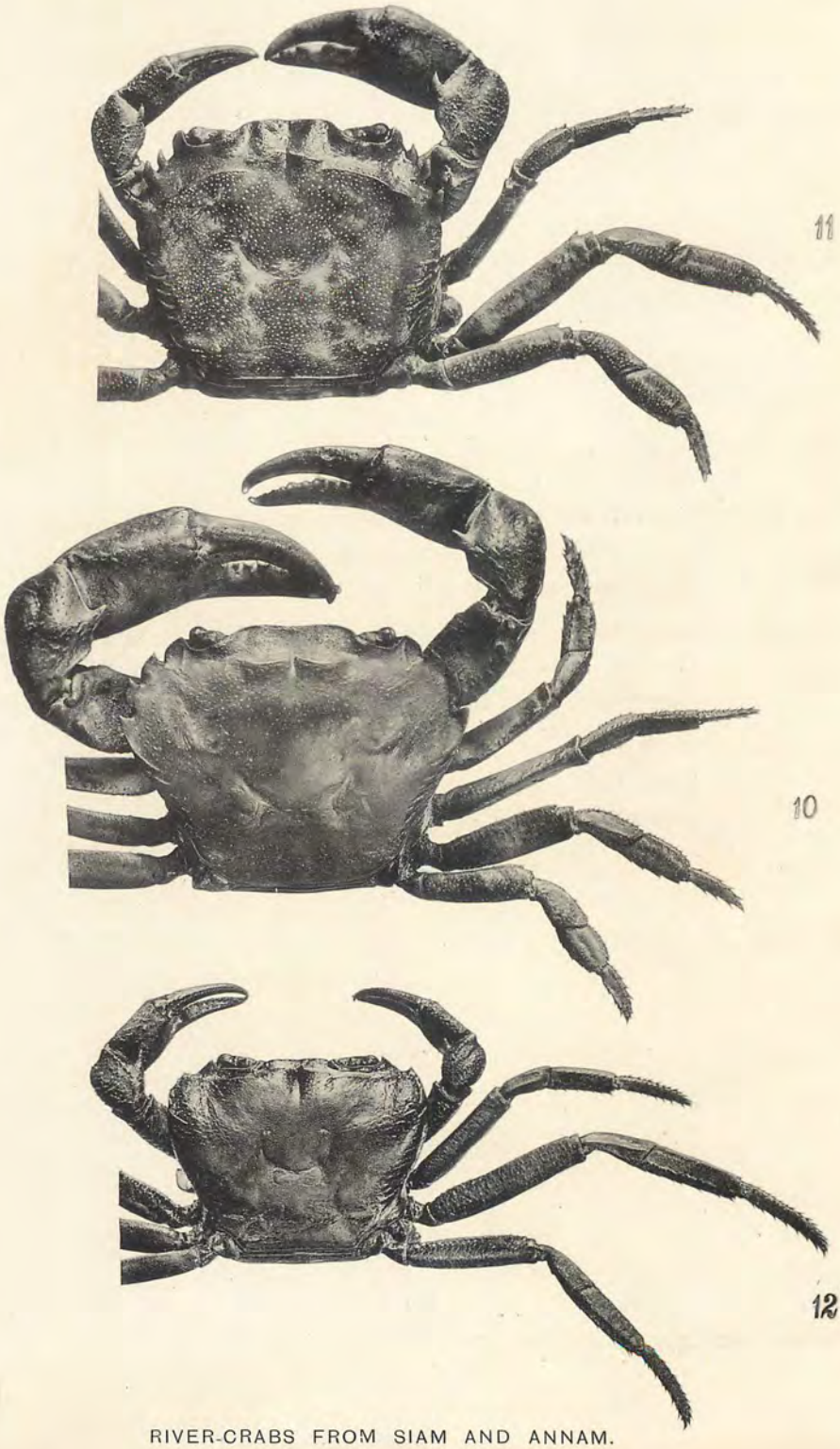
RIVER-CRABS FROM SIAM AND ANNAM.

Explanation of Plate IV.

Fig. 10. *Paratelphusa (Paratelphusa) anophrys*, sp. nov. Male from Khao Ram, Nakon Sritamarat Mts., Peninsular Siam : carapace 25·7 mm. in breadth.

„ 11. *Paratelphusa (Paratelphusa) tetragonum* (Rathbun). Female from the Mekong R., about Lat. 17°. 30′ N. : carapace 20.6 mm. in breadth.

„ 12. *Paratelphusa (Phricotelphusa) aedes*, sp. nov. Female from Khao Ram, Nakon Sritamarat Mts., Peninsular Siam : carapace 25.8 mm. in breadth.



RIVER-CRABS FROM SIAM AND ANNAM.